First Quarter 2005
Groundwater Monitoring Report

Former Fir Haven Shell
Miranda, California
Case No. 12748

Prepared for:

Mr. Eugene Sky

Consulting Engineers & Geologists, Inc.

812 W. Wabash Avenue
Eureka, CA 95501-2138
707 / 441-8855

February 2005

001032

Reference: 001032

February 4, 2005

Ms. Leanne Schroyer
Humboldt County Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

Subject: Groundwater Monitoring Report, First Quarter 2005, Former Fir Haven Shell, Miranda, California; Case No. 12748

Dear Ms. Schroyer:

This report presents the results of the groundwater monitoring for the first quarter 2005 at the Fir Haven Shell site.

If you have any questions, please call me at 707/441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Frans B. Lowman, R.G.
Project manager

SLD:lms
Enclosure: First Quarter 2005 Groundwater Monitoring Report
copy w/encl: Mr. Eugene Sky

Reference: 001032

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QA / QC:FBL___

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Acronyms and Abbreviations

<	denotes a value that is "less than" the method detection limit
ft/ft	feet per foot
mV	millivolts
ppm	parts per million
ug/g	micrograms per gram
ug/L	micrograms per Liter
BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
DCO_2	Dissolved Carbon Dioxide
DIPE	Diisopropyl Ether
DO	Dissolved Oxygen
EC	Electrical Conductivity
EPA	U.S. Environmental Protection Agency
ETBE	Ethyl Tertiary-Butyl Ether
HCDEH	Humboldt County Division of Environmental Health
MTBE	Methyl Tertiary-Butyl Ether
MW-#	Monitoring Well-#
NA	Not Analyzed
NAVD	North American Vertical Datum
NCL	North Coast Laboratories, Ltd
ND	Not Detected
NR	No Reference
NS	Not Sampled
ORP	Oxidation-Reduction Potential
QA/QC	Quality Assurance/Quality Control
SHN	SHN Consulting Engineers & Geologists, Inc.
SP-#	Soil Sample-#
TAME	Tertiary-Amyl Methyl Ether
TBA	Tertiary-Butyl Alcohol
TPHD	Total Petroleum Hydrocarbons as Diesel
TPHG	Total Petroleum Hydrocarbons as Gasoline
UST	Underground Storage Tank
WP-#	Well Point-#

1.0 Introduction

This report presents the results of groundwater monitoring activities for the first quarter 2005, conducted at the former Fir Haven Shell (Case No. 12748). The site is located at 5251 Highway 254 in the community of Miranda, California (Figure 1). SHN Consulting Engineers & Geologists, Inc. (SHN) conducted the groundwater monitoring event on January 21, 2005, as requested by the Humboldt County Division of Environmental Health (HCDEH). A site plan of the subject property is included as Figure 2.

1.1 Organization of the Report

This report is presented in five sections. This section introduces the reader to the site. Section 2.0 discusses the scope of work completed at the site during the first quarter 2005, monitoring event. Section 3.0 presents the results of the groundwater-monitoring program. Section 4.0 presents conclusions regarding the nature of the site, as well as recommendations for future activities. Section 5.0 presents a list of references cited.

1.2 Background

The subject site is the location of a former Shell service station. On March 29, 2001, North Coast Environmental Construction abandoned two Underground Storage Tanks (USTs) previously used to store gasoline. Both USTs were abandoned in place because removal of either UST may have compromised the integrity of an existing building. Both USTs were abandoned under permit from the HCDEH, by cleaning, then tremie filling each UST with a grout mixture. Representatives from the HCDEH were present during the UST abandonment. The locations of the former tanks are shown on Figure 2.

During the UST abandonment, two soil samples were collected by SHN from beneath the location of each tank (soil samples SP-1, SP-2, SP-3, and SP-4) by cutting holes through the bottom of the tanks to access the soil beneath. All four of the soil samples were analyzed for Total Petroleum Hydrocarbons as Gasoline (TPHG); Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX); and Methyl Tertiary-Butyl Ether (MTBE). Additionally, soil sample SP-1 was analyzed for total lead, and the fuel oxygenates Diisopropyl Ether (DIPE), Ethyl Tertiary-Butyl Ether (ETBE), Tertiary-Amyl Methyl Ether (TAME), Tertiary-Butyl Alcohol (TBA), Methanol, and Ethanol.

TPHG was detected in all of the soil samples, at concentrations ranging from 760 micrograms per gram (ug/g), to 8,700 ug/g. Various components of BTEX were also present in each soil sample, including benzene at concentrations ranging from 0.77 ug/g to 5.4 ug/g. None of the fuel oxygenates, including MTBE, were detected in any of the soil samples that were submitted for analyses. Total lead was detected in soil sample SP-1 at a concentration of 41 ug/g. The historic soil analytical results are presented in Appendix A, Table A-1.

On November 24, 2003, SHN supervised the drilling of 7 exploratory soil borings (WP-1 through WP-7) at the Fir Haven Shell site. The soil borings were drilled using a truck mounted Geoprobe® rig operated by Fisch Environmental of Valley Springs, California. The soil borings were extended to a maximum depth of 28 feet Below Ground Surface (BGS). The exploratory soil boring locations are shown on Figure 2. Soil samples were collected

from each of the exploratory borings at various depths. Groundwater samples were also collected from two of the seven borings. Groundwater was not encountered in the remaining five borings; as such, no groundwater samples were collected. TPHG, BTEX constituents, and lead were detected in the soil samples, and TPHG and BTEX constituents were detected in groundwater samples (Appendix A, Tables A-1 and A-2).

In July 2004, SHN submitted a work plan and associated site safety plan for further investigative work, which was approved by the HCDEH on July 29, 2004.

On November 12 and 13, 2004, SHN supervised Mitchell Drilling of Eureka, California, in the installation of four additional exploratory soil borings (MW-1, MW-2, MW-3, and MW-4). The soil borings were extended to maximum depths ranging from 30 to 50 feet BGS. Due to a lack of water in borings MW-3 and MW-4, boring MW-2 was drilled to 50 feet BGS in order to assess the presence of groundwater and the depth to bedrock. The exploratory soil boring locations are shown on Figure 2. Soil samples collected from boring location MW-1 contained detectable concentrations of TPHG and BTEX components. BTEX components were also detected in the two soil samples collected from boring MW-4. The historic soil sample analytical data from the November 2004, site investigation are presented in Appendix A, Table A-1.

The four exploratory soil borings were subsequently converted into groundwater monitoring wells. On November 22, 2004, three of the existing groundwater monitoring wells were developed and sampled. Monitoring well MW-3 was dry at the time of the fieldwork, and as such, could not be developed or sampled. Wells MW-1, MW-2, and MW-4 were developed using surge and purge techniques. The groundwater samples collected from monitoring well MW-1 contained elevated concentrations of TPHG and BTEX. No detectable concentrations of any of these constituents were present in the groundwater samples collected from wells MW-2 or MW-4. The historic groundwater analytical data are presented in Appendix A, Table A-4.

Groundwater beneath the Former Fir Haven Shell site is monitored on a quarterly basis, as requested by the HCDEH.

2.0 Field Activities

2.1 Monitoring Well Sampling

SHN completed the groundwater-monitoring event on January 21, 2005. As part of the monitoring program, monitoring wells MW-1 through MW-4 were purged and sampled. Prior to purging, each monitoring well was measured for depth to water, and checked for the presence of floating product (none was observed). Electrical Conductivity (EC), pH, and temperature were monitored periodically during purging activities using portable instrumentation. All monitoring wells were also measured for Dissolved Oxygen (DO), Oxidation-Reduction Potential (ORP), and Dissolved Carbon Dioxide (DCO_2).

A groundwater sample was then collected from each monitoring well utilizing a disposable polyethylene bailer. The water samples were immediately placed in an ice-filled cooler, and submitted to the laboratory for analyses under appropriate chain-of-custody. Field notes and water sampling data sheets from the first quarter 2005, groundwater-monitoring event are included in Appendix B.

2.2 Laboratory Analysis

Each groundwater sample was analyzed for the following:

- TPHG, in general accordance with U.S. Environmental Protection Agency (EPA) Method Nos. 5030/GCFID/8015B.
- BTEX and MTBE, in general accordance with EPA Method Nos. 5035/8021B.

North Coast Laboratories, Ltd (NCL), a State-certified analytical laboratory located in Arcata, California, conducted all analyses.

2.3 Equipment Decontamination Procedures

All monitoring and sampling equipment was cleaned prior to being transported to the former Fir Haven Shell site. All smaller equipment was initially washed in a water solution containing Liquinox® cleaner, followed by a distilled water rinse, then by a second distilled water rinse. The groundwater samples were collected using pre-cleaned, disposable bailers, and transferred into laboratory-supplied containers.

2.4 Investigation-Derived Waste Management

All rinse water utilized for decontaminating field-sampling equipment and the well purge water was temporarily stored on site in five-gallon buckets. The water was then transported to SHN's 1,000-gallon purge water storage tank located at 812 West Wabash Avenue in Eureka, California. Approximately 31 gallons of decontamination and purge water from the January 21, 2005, groundwater-monitoring event are being stored at SHN, and will be discharged, under permit, to the City of Eureka municipal sewer system. A discharge receipt will be included in the next quarter groundwater monitoring report. Appendix B in this report contains the discharge receipt for the 126 gallons of decontamination and purge water that were generated during the November 2004, well development and sampling event.

3.0 Groundwater Monitoring Results

3.1 Hydrogeology

SHN measured depth-to-groundwater in the existing groundwater monitoring wells on January 21, 2005. During this monitoring event, the direction of groundwater flow beneath the site was to the southeast, with an estimated gradient of 0.297 feet/foot (ft/ft). A groundwater contour map for the January 21, 2005, monitoring event is presented as Figure 3. Historic groundwater elevation data are presented in Appendix A, Table A-3.

Table 1 Groundwater Elevations, January 21, 2005 Former Fir Haven Shell, Miranda, California			
Sample Location	Top of Casing Elevation (feet)[1]	Depth to Water[2] (feet)	Groundwater Elevation (feet)
MW-1	339.23	18.13	321.10
MW-2	338.77	29.55	309.22
MW-3	339.02	27.44	311.58
MW-4	340.11	18.09	322.02

1. Referenced to North American Vertical Datum (NAVD) 88
2. Below top of casing

3.2 Groundwater Analytical Results

The laboratory analytical results for the groundwater samples collected during the first quarter 2005, monitoring event are summarized in Table 2. TPHG was detected in the groundwater sample collected from well MW-1, at a concentration of 26,000 micrograms per Liter (ug/L). Detectable concentrations of BTEX components were also present in this sample. The groundwater samples collected from wells MW-2, MW-3, and MW-4 did not contain any detectable concentrations of either TPHG or BTEX. MTBE was not detected in any of the groundwater samples collected during the first quarter 2005, monitoring event.

The concentrations of TPHG, benzene, and MTBE in groundwater on January 21, 2005 are shown on Figure 4. The complete laboratory test results, Quality Assurance/Quality Control (QA/QC) data, and chain-of-custody documentation are included in Appendix C. Historic groundwater monitoring data is presented in Appendix A, Table A-4.

Table 2 Groundwater Analytical Results, January 21, 2005 Former Fir Haven Shell, Miranda, California (in ug/L)[1]						
Sample Location	TPHG[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	MTBE[3]
MW-1	26,000	3,200	2,500	870	3,900	<300[4,5]
MW-2	<50	<0.50	<0.50	<0.50	<0.50	<3.0
MW-3	<50	<0.50	<0.50	<0.50	<0.50	<3.0
MW-4	<50	<0.50	<0.50	<0.50	<0.50	<3.0

1. ug/L: micrograms per Liter
2. Total Petroleum Hydrocarbons as Gasoline (TPHG), analyzed in general accordance with EPA Method Nos. 5030/GCFID/8015B.
3. Benzene, Toluene, Ethylbenzene, total Xylenes, and Methyl Tertiary-Butyl Ether (MTBE), analyzed in general accordance with EPA Method Nos. 5030/8021B.
4. <: Denotes a value that is "less than" the laboratory method detection limit.
5. Reporting limit was raised due to matrix interference.

3.3 Biodegradation Indicator Monitoring

Natural Attenuation Parameters DO, DCO_2, and ORP were measured in all four groundwater-monitoring wells on January 21, 2005, prior to sampling, and are summarized in Table 3. DO concentrations ranged from 2.04 parts per million (ppm) in well MW-4, to 5.26 ppm in well MW-3. These DO concentrations appear to be sufficient to support biodegradation. DCO_2 concentrations ranged from 30 ppm in well MW-2, to 180 ppm in well MW-1, and indicate that biodegradation may be occurring at the site. ORP measurements ranged from -67 millivolts (mV) in well MW-1, to 116 mV in well MW-3, and indicate that both aerobic and anaerobic conditions exist in site wells. Historic DO, DCO_2, and ORP measurements are presented in Appendix A, Table A-5.

Table 3
DO, DCO_2, and ORP Measurement Results, January 21, 2005
Former Fir Haven Shell, Miranda, California

Sample Location	DO[1] (ppm)[2]	DCO_2[3] (ppm)	ORP[4] (mV)[5]
MW-1	2.09	180	-67
MW-2	4.96	30	93
MW-3	5.26	60	116
MW-4	2.04	40	104

1. DO: Dissolved Oxygen, field measured using portable instrumentation.
2. ppm: parts per million.
3. DCO_2: Dissolved Carbon Dioxide, field measured using a field test kit.
4. ORP: Oxidation-Reduction Potential; filed measurement using portable instrumentation.
5. mV: millivolts.

4.0 Discussion and Recommendations

During the first quarter 2005, groundwater-monitoring event, the groundwater sample collected from monitoring well MW-1 contained elevated concentrations of TPHG and BTEX components. None of the other three groundwater samples that were collected contained detectable concentrations of either TPHG or BTEX. MTBE was not detected in any of the groundwater samples that were collected during this monitoring event.

Based on the results of groundwater monitoring, SHN recommends that quarterly groundwater monitoring be continued at the Former Fir Haven Shell site. As part of the groundwater-monitoring program, each well will be measured for depth to water, purged, and sampled. Each groundwater sample will be analyzed for TPHG, BTEX, and MTBE. In addition, all four wells will be monitored for the natural attenuation parameters DO, DCO_2, and ORP. A quarterly groundwater monitoring report will be prepared for submittal to the HCDEH within 60 days of the sampling event. The next groundwater-monitoring event is scheduled for April 2005.

5.0 References Cited

U.S. Environmental Protection Agency. (December 1995). ***Engineering Forum Issue, Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites***. NR:EPA.

SHN Consulting Engineers & Geologists, Inc. (June 19, 2001). "Site Investigation Work Plan, Former Fir Haven Shell, 5251 Highway 254, Miranda, California, HCDEH LOP No. 12748." Eureka: SHN.

---. (June 19, 2001). "Monitoring Well Installation Work Plan, Former Fir Haven Shell, Miranda, California; Case No. 12748." Eureka: SHN.

--(January 2004). ***Well point Investigation Report of Findings, Former Fir Haven Shell, Miranda, California; Case No. 12748***. Eureka:SHN.

--(January 2005). Groundwater Monitoring Well Installation Report of Findings, Former Fir Haven Shell, Miranda, California; Case No. 12748. Eureka:SHN.

Table A-1
Historic Soil Analytical Results
Former Fir Haven Shell, Miranda, California
(in ug/g)[1]

Sample Location	Sample Date	TPHG[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	m,p-Xylene[4]	o-Xylene[4]	MTBE[5]	Fuel Oxygenates[6]	Total Lead[7]
SP-1	3/29/01	8,700	3.1	110	91	730	NA[8]	NA	<0.20[9]	ND[10]	NA
SP-2	3/29/01	3,000	0.77	<20[11]	<3.0[11]	308	NA	NA	<5.0	NA	NA
SP-3	3/29/01	2,500	5.4	67	9.4	295	NA	NA	<5.0	NA	NA
SP-4	3/29/01	760	<0.50	6.7	1.6	77	NA	NA	<5.0	NA	NA
WP-1 @ 15-16'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	<10
WP-1 @ 23-24'	11/24/03	120[12]	<0.10[11]	<0.20[11]	<1.1[11]	NA	<0.40[11]	<1.0[11]	<1.0[11]	NA	<10
WP-2 @ 11-12'	11/24/03	<1.0[13]	<0.0050	<0.0050	<0.0050	NA	<0.010[14]	<0.0050	<0.050	NA	<10
WP-2 @23-24'	11/24/03	59[15]	3.2	0.92	2.5	NA	4.4	1.4	<1.0[11]	NA	<10
WP-3 @ 11-12'	11/24/03	<1.0	<0.0050	<0.020[11]	0.0054	NA	0.019	0.0078	<0.050	NA	<10
WP-3 @ 23-24'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	<10
WP-4 @ 11-12'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	12
WP-4 @ 21-22'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	<10
WP-5 @ 11-12'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	14
WP-5 @ 18-19'	11/24/03	1.8[12]	<0.0050	<0.0050	<0.018[11]	NA	<0.0050	<0.0050	<0.050	NA	17
WP-6 @ 11-12'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	<10
WP-6 @ 21-22'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	<10
WP-7 @ 13-14'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	<10
WP-7 @ 25-26'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	<10
MW-1 @ 11-11.5'	11/13/04	7.0[12, 15]	<0.0050	<0.050	<0.020	NA	<0.020	0.042	<0.050	NA	13
MW-1 @ 16-16.5'	11/13/04	1.0	0.0089	0.023	0.011	NA	0.022	0.012	<0.050	NA	14
MW-1 @ 21.5-23'	11/13/04	5,600[15]	20	150	71	NA	290	120	<40	NA	18
MW-2 @ 15.5-16'	11/12/04	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	15
MW-2 @ 26-26.5'	11/12/04	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	18
MW-3 @ 15.5-16'	11/12/04	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	25
MW-3 @ 25-25.5'	11/12/04	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	14
MW-4 @ 17.5-18'	11/12/04	<1.0	<0.0050	0.0077	<0.0050	NA	0.0091	<0.0050	<0.050	NA	14
MW-4 @ 23.5-24'	11/12/04	<1.0	<0.0050	0.0069	<0.0050	NA	0.0086	0.0066	<0.050	NA	10

Table A-1, Continued
Historic Soil Analytical Results
Former Fir Haven Shell, Miranda, California
(in ug/g)[1]

Sample Location	Sample Date	TPHG[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	m,p-Xylene[4]	o-Xylene[4]	MTBE[5]	Fuel Oxygenates[6]	Total Lead[7]

1. ug/g: micrograms per gram
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in general accordance with EPA Method Nos. 5030 or 8260B
3. BTEX: Benzene, Toluene, Ethylbenzene, and total Xylenes, analyzed in general accordance with EPA Method Nos. 8020 or 8260B
4. m,p-Xylene and o-Xylene, analyzed in general accordance with EPA Method Nos. 5035/8021B
5. MTBE: Methyl Tertiary-Butyl Ether, analyzed in general accordance with EPA Method Nos. 8020 or 8260B
6. Fuel Oxygenates: Diisopropyl Ether (DIPE), Ethyl Tertiary-Butyl Ether (ETBE), Tertiary-Amyl Methyl Ether (TAME), Tertiary-Butyl Alcohol (TBA), methanol, and ethanol, analyzed in general accordance with EPA Method No. 8260B
7. Total lead, analyzed in general accordance with EPA Method No. 6010B
8. NA: Not Analyzed
9. <: Denotes a value that is "less than" the laboratory method detection limit
10. ND: Not Detectable; fuel oxygenates not detected above their respective method reporting limits; see laboratory reports
11. Method reporting limit was raised due to matrix interference
12. Sample does not represent a peak pattern consistent with that of gasoline. The reported results represent the amount of material in the gasoline range
13. Sample was reported as non-detectable due to matrix interference
14. The reporting limit was raised due to an extracted interferant
15. Sample appears to be similar to gasoline but certain peak ratios are not that of a fresh gasoline standard. The reported result represents the amount of material in the gasoline range

Table A-2
Historic Groundwater Analytical Results
Former Fir Haven Shell, Miranda, California
(in ug/L)

Sample Location	Sample Date	TPHG[2]	TPHD[3]	B[4]	T[4]	E[4]	X[4]	MTBE[4]
DW-1[5]	9/30/02	<50[6]	<50	<0.50	<0.50	<0.50	<0.50	<3.0
WP-1	11/24/03	490[7]	NA[8]	5.3[9]	<5.0[10]	9.3	6.2	<3.0
WP-2	11/24/03	2,700,000[10]	NA	15,000	72,000	100,000	660,000	<30,000[9]

1. ug/L: micrograms per Liter
2. TPHG: Total Petroleum Hydrocarbons as Gasoline analyzed in general accordance with EPA Method No. 3510/GCFID./8015B
3. TPHD: Total Petroleum Hydrocarbons as Diesel analyzed in general accordance with EPA Method No. 3510/GCFID
4. Benzene (B), Toluene (T), Ethylbenzene (E), total Xylenes (X), and Methyl Tertiary-Butyl Ether (MTBE) analyzed in accordance with EPA Method No. 5030/8021B
5. Groundwater sample collected from a domestic well located on the site property. Sample collected by HCDEH personnel
6. <: Denotes a value that is "less than" the method detection limit
7. The gasoline value includes the reported gasoline components and additives in addition to other peaks in the gasoline range
8. NA: Not Analyzed
9. Reporting limit was raised due to matrix interference
10. Sample appears to be similar to gasoline but certain peak ratios are not of a fresh gasoline standard; the reported result represents the amount of material in the gasoline range

Table A-3
Historic Groundwater Elevations
Former Fir Haven Shell, Miranda, California

Sample Location	Sample Date	Top of Casing Elevation (feet)[1]	Depth to Water[2] (feet)	Groundwater Elevation (feet)
MW-1	11/20/04	339.23	19.95	319.28
	1/21/05		18.13	321.10
MW-2	11/20/04	338.77	32.78	305.99
	1/21/05		29.55	309.22
MW-3	11/20/04	339.02	DRY[3]	--
	1/21/05		27.44	311.58
MW-4	11/20/04	340.11	22.68	317.43
	1/21/05		18.09	322.02

1. Referenced to North American Vertical Datum (NAVD) 88
2. Below top of casing
3. Well was dry on November 20, 2004. As such, a depth to water measurement could not be collected.

Table A-4
Historic Groundwater Monitoring Well Analytical Results
Former Fir Haven Shell, Miranda, California
(in ug/L)[1]

Sample Location	Sample Date	TPHG[2]	B[3]	T[3]	E[3]	X[3]	MTBE[3]
MW-1	11/20/04	53,000[4]	4,300	5,900	1,600	8,600	<600[5,6]
	1/21/05	26,000	3,200	2,500	870	3,900	<300
MW-2	11/20/04	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	1/21/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0
MW-3	11/20/04	NS[7]	NS	NS	NS	NS	NS
	1/21/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0
MW-4	11/20/04	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	1/21/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0

1. ug/L: micrograms per Liter
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in general accordance with EPA Method Nos. 3510/GCFID./8015B or 5030/GCFID/8015B.
3. Benzene (B), Toluene (T), Ethylbenzene (E), m,p-Xylene, o-Xylene, and Methyl Tertiary-Butyl Ether (MTBE) analyzed in general accordance with EPA Method Nos. 5030/8021B.
4. Sample appears to be similar to gasoline but certain peak ratios are not that of a fresh gasoline standard. The reported result represents the amount of material in the gasoline range.
5. <: Denotes a value that is "less than" the method detection limit.
6. Reporting limit raised due to matrix interference.
7. NS: Not Sampled.

Table A-5
Historic DO, DCO_2, and ORP Measurement Results
Former Fir Haven Shell, Miranda, California

Sample Location	Sample Date	DO[1] (ppm)[2]	DCO_2[3] (ppm)	ORP[4] (mV)[5]
MW-1	1/21/05	2.09	180	-67
MW-2	1/21/05	4.96	30	93
MW-3	1/21/05	5.26	60	116
MW-4	1/21/05	2.04	40	104

1. DO: Dissolved Oxygen, field measured using portable instrumentation.
2. ppm: parts per million.
3. DCO_2: Dissolved Carbon Dioxide, field measured using a field test kit.
4. ORP: Oxidation-Reduction Potential; filed measurement using portable instrumentation.
5. mV: millivolts.

Appendix A

Historic Monitoring Data

Appendix B

Field Notes

Appendix C

Laboratory Analytical Reports

CONSULTING ENGINEERS & GEOLOGISTS, INC.
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Reference: 001032

February 4, 2005

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100 H Street, Suite 100
Eureka, CA 95501

Subject: Groundwater Monitoring Report, First Quarter 2005, Former Fir Haven Shell, Miranda, California; Case No. 12748

Dear Ms. Schroyer:

This report presents the results of the groundwater monitoring for the first quarter 2005 at the Fir Haven Shell site.

If you have any questions, please call me at 707/441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Frans B. Lowman, R.G.
Project manager

SLD:lms
Enclosure: First Quarter 2005 Groundwater Monitoring Report
copy w/encl: Mr. Eugene Sky

G:\2001\001032 Fir Haven Shell\rpt\First Quarter 2005-rpt.doc

Reference: 001032

First Quarter 2005
Groundwater Monitoring Report

Former Fir Haven Shell
Miranda, California
Case No. 12748

Prepared for:

Mr. Eugene Sky

Prepared by:

Consulting Engineers & Geologists, Inc.
812 W. Wabash Avenue
Eureka, CA 95501-2138
707/441-8855

February 2005

REGISTERED PROFESSIONAL GEOLOGIST
FRANS BARTON LOWMAN
NO. 6705
Exp. 6/30/05
STATE OF CALIFORNIA

QA/QC:FBL

G:\2001\001032 Fir Haven Shell\rpt\First Quarter 2005-rpt.doc

CONSULTING ENGINEERS & GEOLOGISTS, INC.
480 Hemsted Drive * Redding, CA 96002* Tel: 530.221.5424 * FAX: 530.221.0135 *E-mail: shninfo@shn-redding.com
812 W. Wabash * Eureka, CA 95501 * Tel: 707.441.8855 * FAX: 707.441.8877 *E-mail: shninfo@shn-engr.com

DAILY FIELD REPORT

JOB NO 001032

Page 1 of 8

PROJECT NAME: Former Fairhaven Shell	CLIENT/OWNER: Eugene SKy	DAILY FIELD REPORT SEQUENCE NO.: 1	
GENERAL LOCATION OF WORK: Miranda, CA	OWNER/CLIENT REPRESENTATIVE: Eugene SKy	DATE: 1-21-05	DAY OF WEEK: Friday
TYPE OF WORK: Quarterly sampling	WEATHER: Foggy overcast to clear	PROJECT ENGINEER/ SUPERVISOR: Frans Lawman	
SOURCE & DESCRIPTION OF FILL MATERIAL	KEY PERSONS CONTACTED	TECHNICIAN: David R. Paine	

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, & COMPACTING

0914	arrived at site, removed lids and caps on all 4 wells, r
	mw-3 had water in flush mount, bailed out.
0937	started taking water levels deconing the sounder after each
	well by scrubbing it with liguinox then rinsing it with DI water.
1005	sampled mw-3 with a disposable bailer.
1012	started taking DO readings on mw-3
1005	started purging mw-3 with a disposable bailer, purge water was
	caught in a graduated 2 gal. bucket, well went dry.
1036	started purging mw-4 with a disposable bailer, purge water was
	caught in a graduated 4 gal. bucket.
1122	started pureging mw-2 with a disposable bailer, purge water was
	caught in a graduated 4 gal. bucket.
1225	sampled mw-4, secured well with cap and lid.
1238	started purging mw-1 with a disposable bailer, ~~secured~~ purge water
	was caught in a graduated 4 gal. bucket.
1320	sampled mw-2, secured well with cap and lid.
1340	sampled mw-3, secured well with cap and lid.
1400	sampled mw-1, secured well with cap and lid
1410	OFF SITE
Note	All decon water and purge water was caught then poured into a
	50 gal. plastic drum that I brought in the truck, then
	transported to SHN's 1,000 gal. PWST located at 812 W. Wabash
	Avenue Eureka, CA 31 gallons total.

COPY GIVEN TO:

REPORTED BY: David R. Paine

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812 W. Wabash • Eureka, CA 95501-2138 • 707/441-8855 • FAX: 707/441-8877 • shninfo@shn-engr.com

EQUIPMENT CALIBRATION SHEET

Name: David R. Paine

Project Name: Former Fir Haven Shell

Reference No.: 001032

Date: 1-21-05

Equipment: ☒ pH & EC ☐ PID ☐ $GTCO_2$ ☐ GTLEL
☐ Turbidity ☒ Other Dissolved Oxygen Meter YSI95

Description of Calibration Procedure and Results:

pH & Ec meter is calibrated using a 2 buffer method with 7.01 and 4.01, the Ec (conductivity) is set at 1413 µS.

DO meter is self calibrating with the Altimeter set at 3.

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Groundwater Elevations

Job No.: 001032 Name: David R. Paine

Client: Eagle Sky Date: 1-21-05

Location: Miranda, CA Weather: Foggy overcast

Sample Location	Time of Reading	Top of Casing Elevation (feet)	Depth To Water (feet)	Water Surface Elevation (feet)
MW-1	0946	339.23	18.13	321.10
MW-2	0943	338.77	29.55	309.22
MW-3	0937	339.02	27.44	311.58
MW-4	0941	340.11	18.09	322.02

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Water Sampling Data Sheet

Project Name: Foemer Fithaven Shell
Project No.: 001032
Location: Miranda, CA
Well #: MW-4
Hydrocarbon Thickness/Depth (feet): NA

Date/Time: 1-21-05
Sampler Name: David R Paine
Sample Type: Ground water
Weather: Foggy overcast to clear
Key Needed: YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
29.32	-	18.09	=	11.23	x	0.163	=	1.83

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1036	2.04	40	104				0.25 gal	
1046	↓			744	62.8°	7.34	2 gal	
1054	↓			821	62.7°	7.34	4 gal	
1115	No Flow thru cell			827	62.2°	7.29	6 gal	
							gal	
1225	sample Time							

Purge Method: Hand Bail
Total Volume Removed: 6.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-4	3-40ml VOA's	YES HCL	NCL	TPHG
MW-4	3-40ml VOA's	YES HCL	NCL	BTEX and MTBE

Well Condition: Good
Remarks: Recharged to 22.30 at sample time

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Water Sampling Data Sheet

Project Name: Former Fiphaven Shell
Project No.: 001032
Location: Miranda, CA
Well #: MW-2
Hydrocarbon Thickness/Depth (feet): NA
Date/Time: 1-21-05
Sampler Name: David R. Paine
Sample Type: Ground water
Weather: Foggy overcast to clear
Key Needed: YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
50.17	-	29.55	=	20.62	x	0.163	=	3.36

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1122	4.96	30	93				0.25 gal.	
1137	↓			198	59.3°	6.56	3.50 gal.	
1147	↓			248	60.1°	6.80	7 gal.	
1158	No Flow			244	61°	6.74	10.50 gal.	
1210	Turn cell			265	61.6°	6.85	14 gal.	
1320	sample Time							

Purge Method: Hand Bail
Total Volume Removed: 14.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-2	3-40ml VOA's	YES HCL	NCL	TPHG
MW-2	3-40ml VOA's	YES HCL	NCL	BTEX and MTBE

Well Condition: Good
Remarks:
Recharged to 31.83 at sample time

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Water Sampling Data Sheet

Project Name: Former Fairhaven Shell
Project No.: 001032
Location: Miranda, CA
Well #: MW-3
Hydrocarbon Thickness/Depth (feet): NA
Date/Time: 1-21-05
Sampler Name: David R. Paine
Sample Type: Ground water
Weather: Foggy overcast to clear
Key Needed: YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
29.35	-	27.44	=	1.91	x	0.163	=	0.31

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1017	5.26	60	116				0.15 gal.	
1023	↓			931	54.6°	6.91	0.15 gal.	
1032	↓			900	54.6°	6.98	0.25 gal.	
1106	No flow			918	54.8°	6.99	1 gal.	DRY
	Flow cell						gal.	
1340	sample Time							

Purge Method: Hand Bail
Total Volume Removed: 1.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-3	3-40ml VOA's	YES HCL	NCL	TPHG
MW-3	3-40ml VOA's	YES HCL	NCL	BTEX and MTBE

Well Condition: Good
Remarks: Recharged to 28.40 at sample time

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Water Sampling Data Sheet

Project Name:	Former Fairhaven Shell	Date/Time:	1-21-05
Project No.:	001032	Sampler Name:	David R. Paine
Location:	Miranda, CA	Sample Type:	Ground water
Well #:	MW-1	Weather	Foggy overcast to clear
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	YES Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
30.05	-	18.13	=	11.92	x	0.163	=	1.94

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1238	2.09	180	-67				0.25 gal.	
1250	↓			597	60.5°	6.65	2 gal.	
1257	↓			610	61.1°	6.69	4 gal.	
1303	No Flow			596	61.5°	6.70	6 gal.	
	Horn call						gal.	
1400	sample Time							

Purge Method: Hand Bail

Total Volume Removed: 6.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-1	3-40ml VOA's	YES HCL	NCL	TPHG
MW-1	3-40ml VOA's	YES HCL	NCL	BTEX and MTBE

Well Condition: Good

Remarks:

Recharged to 19.50 at sample time

Client Name: **FORMER FIR HAVEN SHELL**

The water from your site: **5251 HIGHWAY 254 MIRANDA, CA**
RWQCB CASE # 12748

SHN ref # **001032** Collected On: **11/13-14,22/04**

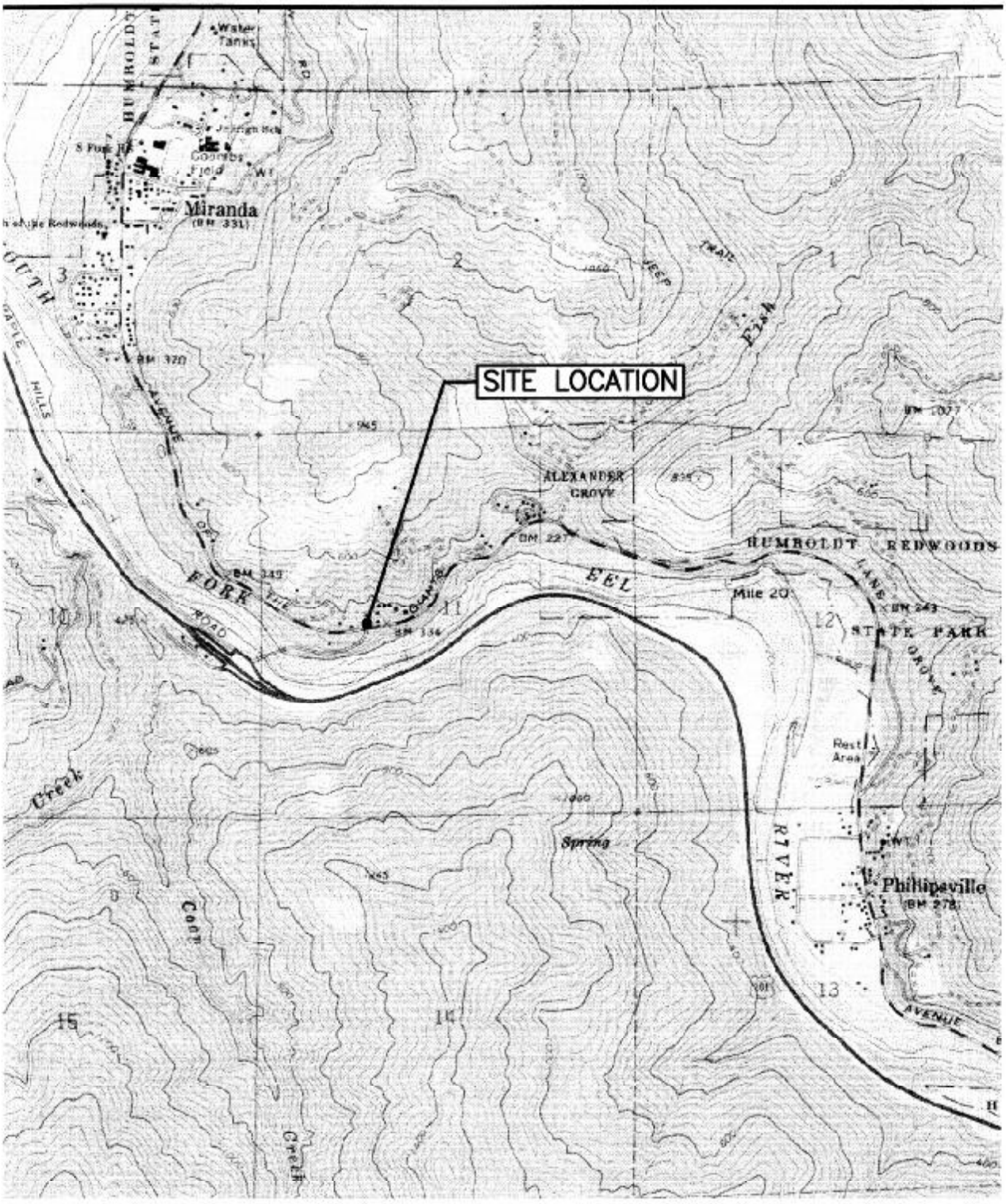
Has been tested and certified as acceptable to be discharged into the City of Eureka municipal sewer system.

Amount Discharged: **126 GALLONS**

Date Discharged: **1/24/05**

Certified by: **DAVID R. PAINE**

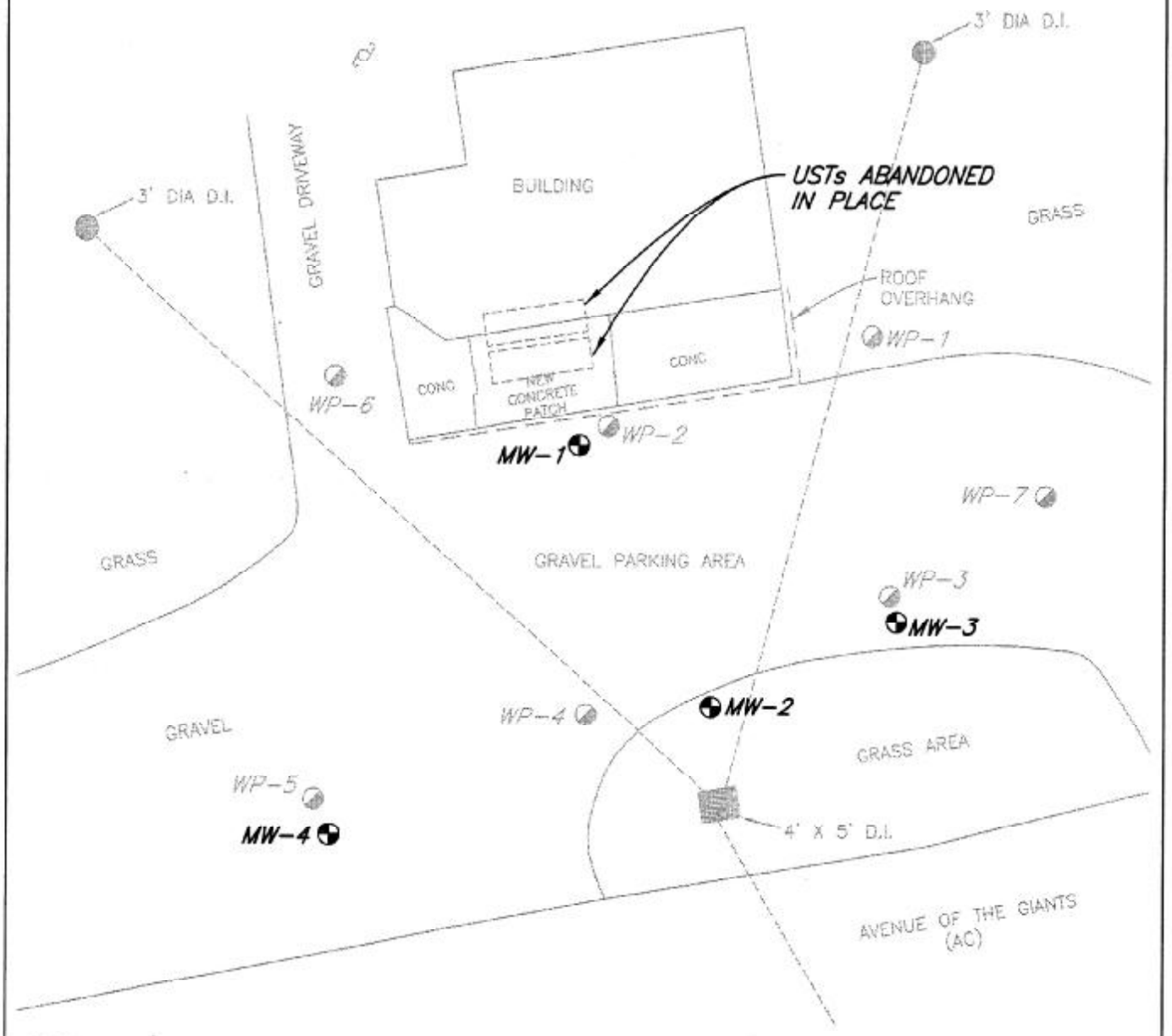
SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.
City of Eureka Wastewater Discharge Permit #65



MAP REFERENCE:
USGS QUADRANGLE,
MIRANDA, CALIFORNIA

1"=2000'±

SHN Consulting Engineers & Geologists, Inc.	Former Fir Haven Shell Miranda, California		Site Location Map SHN 001032
	December, 2003	001032-sitemap	Figure 1



EXPLANATION

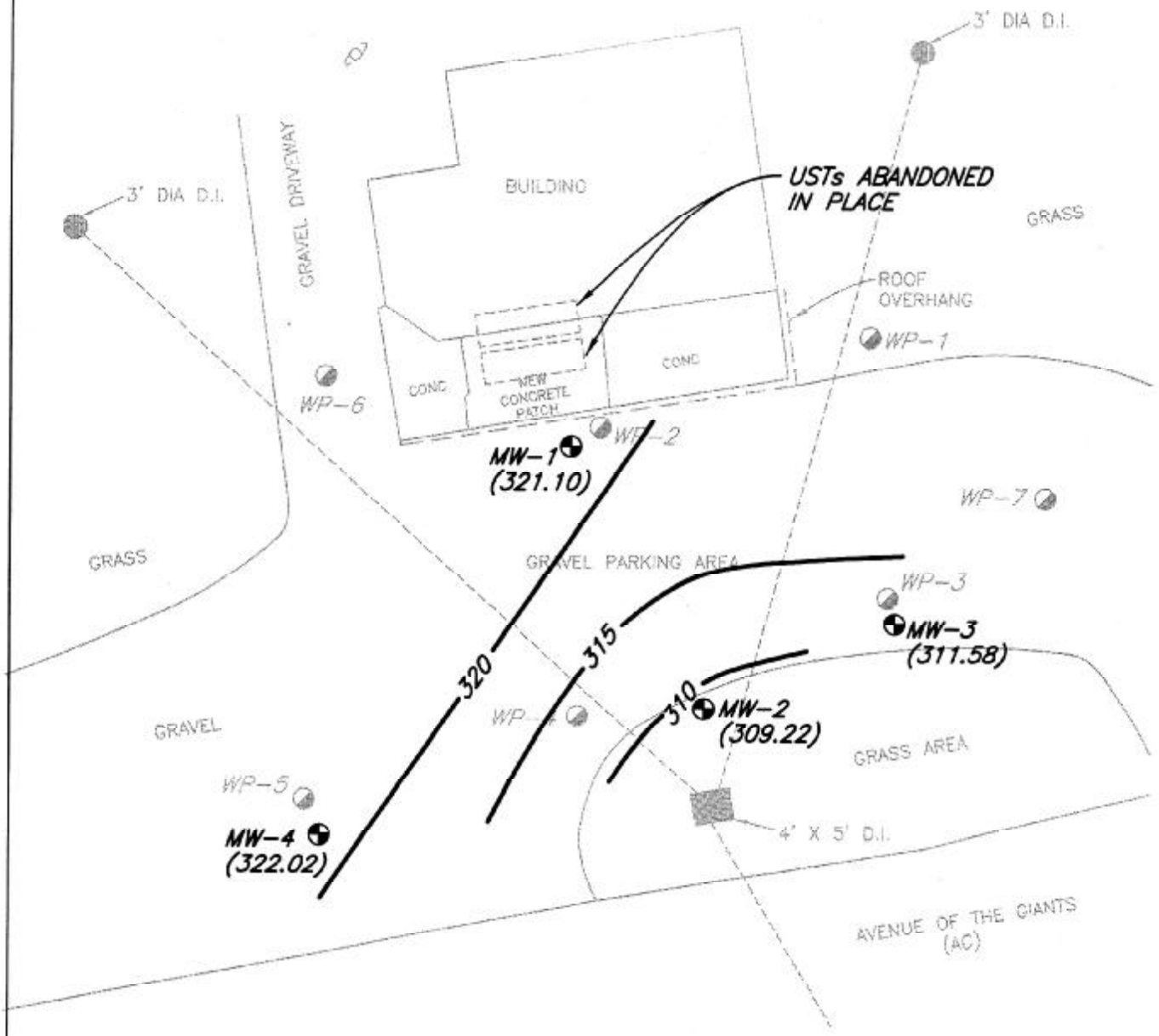
WP-1 BORING LOCATION AND DESIGNATION (SHN, NOVEMBER 2003)

MW-1 MONITORING WELL LOCATION AND DESIGNATION (SHN, NOVEMBER 2004)

NOTE: BORING LOCATIONS ARE APPROXIMATE

1"=20'

SHN Consulting Engineers & Geologists, Inc.	Former Fir Haven Shell Miranda, California	Site Plan SHN 001032	
	DECEMBER 2004	001032-SI1-DEC-04	Figure 2



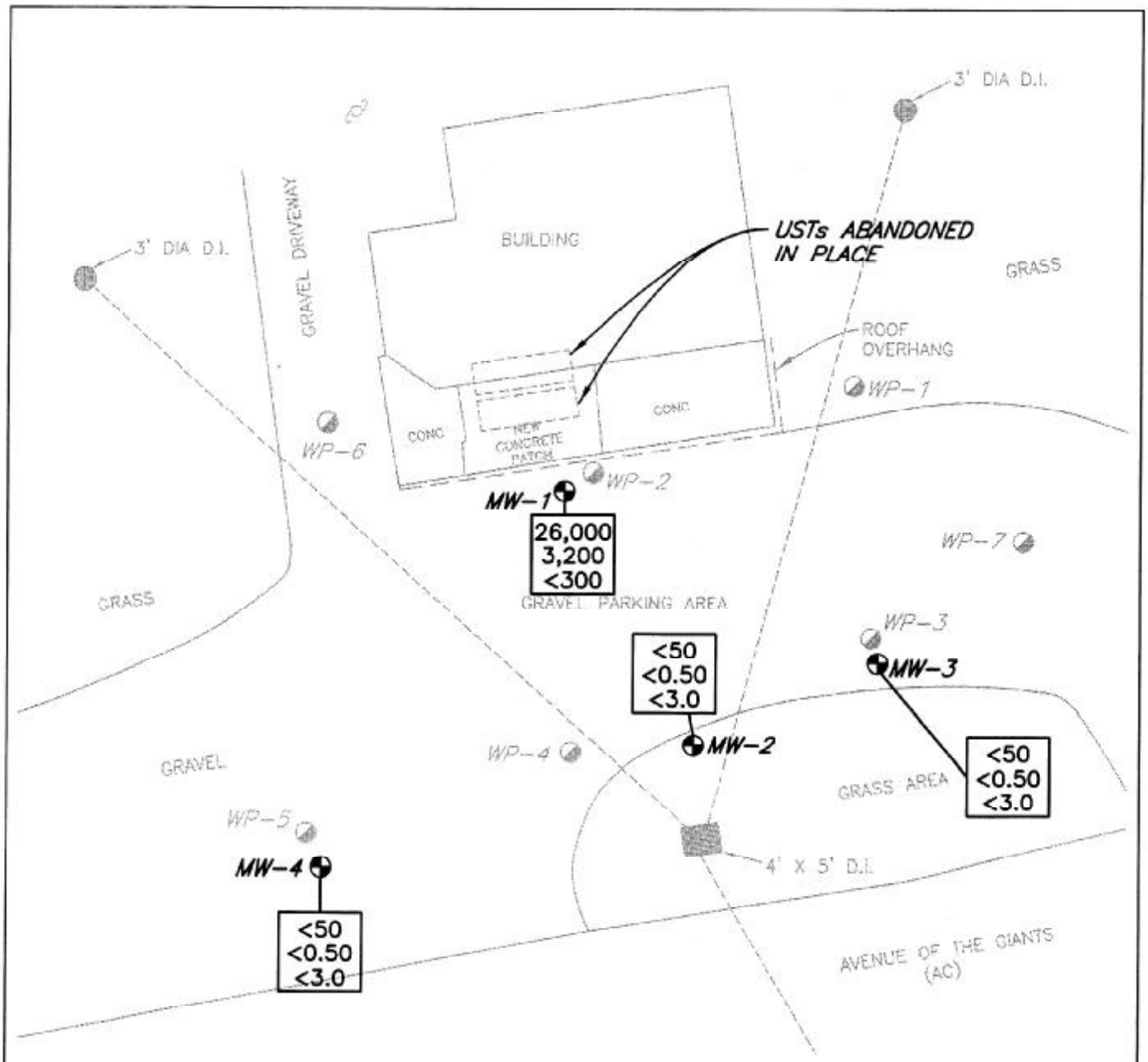
EXPLANATION

WP-1	SOIL BORING LOCATION AND DESIGNATION (SHN, NOVEMBER 2003)
MW-1	MONITORING WELL LOCATION AND DESIGNATION (SHN, NOVEMBER 2004)
(322.02)	GROUNDWATER ELEVATION IN FEET (NAVD88)
—310—	GROUNDWATER CONTOUR IN FEET (NGVD88)

N

1"=20'

SHN Consulting Engineers & Geologists, Inc.	Former Fir Haven Shell Miranda, California	Groundwater Contours January 21, 2005 SHN 001032	
	February, 2005	001032-GWC-JAN-05	Figure 3



EXPLANATION

WP-1 — SOIL BORING LOCATION AND DESIGNATION (SHN, NOVEMBER 2003)

MW-1 — MONITORING WELL LOCATION AND DESIGNATION (SHN, NOVEMBER 2004)

<50 TPHG
<0.50 BENZENE
<3.0 MTBE
> RESULTS IN ug/L

N

1"=20'

SHN Consulting Engineers & Geologists, Inc.	Former Fir Haven Shell Miranda, California	Petroleum Hydrocarbon Concentrations in Groundwater, January 21, 2005 SHN 001032	
	February, 2005	001032-PHC-JAN-05	Figure 4

NORTH COAST
LABORATORIES LTD.

REC'D FEB 0 1 2005

January 28, 2005

SHN Consulting Engineers and Geologists
812 West Wabash Avenue
Eureka, CA 95501

Attn: Frans Lowman

RE: 001032, Former Firhaven Shell

Order No.: 0501441
Invoice No.: 47835
PO No.:

ELAP No. 1247-Expires July 2006

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
01A	MW-4
02A	MW-2
03A	MW-3
04A	MW-1

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

REPORT CERTIFIED BY

Laboratory Supervisor(s) | QA Unit | Jesse G. Chaney, Jr.
Laboratory Director

5680 West End Road • Arcata California 95521-9202 • 707-822-4649 • FAX 707-822-6831

CLIENT: SHN Consulting Engineers and Geologists
Project: 001032, Former Firhaven Shell
Lab Order: 0501441

CASE NARRATIVE

BTEX:
The MTBE result for sample MW-1 was reported as ND with a dilution due to matrix interference.

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries were above the upper acceptance limit for the surrogate. The analyte recoveries were within the acceptance limits; therefore, the data were accepted.

NORTH COAST LABORATORIES
5680 West End Road • Arcata, California 95521-9202 • 707-822-4649 • FAX 707-822-6831

Date: 28-Jan-05
WorkOrder: 0501441

ANALYTICAL REPORT

Client Sample ID: MW-4
Lab ID: 0501441-01A

Received: 1/21/05 **Collected:** 1/21/05 12:25

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
MTBE	ND	3.0	µg/L	1.0		1/28/05
Benzene	ND	0.50	µg/L	1.0		1/28/05
Toluene	ND	0.50	µg/L	1.0		1/28/05
Ethylbenzene	ND	0.50	µg/L	1.0		1/28/05
m,p-Xylene	ND	0.50	µg/L	1.0		1/28/05
o-Xylene	ND	0.50	µg/L	1.0		1/28/05
Surrogate: Cis-1,2-Dichloroethylene	98.4	85-115	% Rec	1.0		1/28/05

Test Name: TPH as Gasoline

Reference: EPA 5030/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gas (C6-C14)	ND	50	µg/L	1.0		1/28/05

Client Sample ID: MW-2
Lab ID: 0501441-02A

Received: 1/21/05 **Collected:** 1/21/05 13:20

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
MTBE	ND	3.0	µg/L	1.0		1/28/05
Benzene	ND	0.50	µg/L	1.0		1/28/05
Toluene	ND	0.50	µg/L	1.0		1/28/05
Ethylbenzene	ND	0.50	µg/L	1.0		1/28/05
m,p-Xylene	ND	0.50	µg/L	1.0		1/28/05
o-Xylene	ND	0.50	µg/L	1.0		1/28/05
Surrogate: Cis-1,2-Dichloroethylene	99.7	85-115	% Rec	1.0		1/28/05

Test Name: TPH as Gasoline

Reference: EPA 5030/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gas (C6-C14)	ND	50	µg/L	1.0		1/28/05

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5680 West End Road • Arcata, California 95521-9202 • 707-822-4649 • FAX 707-822-6831

Date: 28-Jan-05
WorkOrder: 0501441

ANALYTICAL REPORT

Client Sample ID: MW-3 **Received:** 1/21/05 **Collected:** 1/21/05 13:40
Lab ID: 0501441-03A

Test Name: BTEX **Reference:** EPA 5030/EPA 8021B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
MTBE	ND	3.0	µg/L	1.0		1/28/05
Benzene	ND	0.50	µg/L	1.0		1/28/05
Toluene	ND	0.50	µg/L	1.0		1/28/05
Ethylbenzene	ND	0.50	µg/L	1.0		1/28/05
m,p-Xylene	ND	0.50	µg/L	1.0		1/28/05
o-Xylene	ND	0.50	µg/L	1.0		1/28/05
Surrogate: Cis-1,2-Dichloroethylene	91.3	85-115	% Rec	1.0		1/28/05

Test Name: TPH as Gasoline **Reference:** EPA 5030/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gas (C6-C14)	ND	50	µg/L	1.0		1/28/05

Client Sample ID: MW-1 **Received:** 1/21/05 **Collected:** 1/21/05 14:00
Lab ID: 0501441-04A

Test Name: BTEX **Reference:** EPA 5030/EPA 8021B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
MTBE	ND	300	µg/L	100		1/28/05
Benzene	3,200	500	µg/L	1,000		1/28/05
Toluene	2,500	500	µg/L	1,000		1/28/05
Ethylbenzene	870	50	µg/L	100		1/28/05
m,p-Xylene	2,800	500	µg/L	1,000		1/28/05
o-Xylene	1,100	500	µg/L	1,000		1/28/05
Surrogate: Cis-1,2-Dichloroethylene	109	85-115	% Rec	100		1/28/05

Test Name: TPH as Gasoline **Reference:** EPA 5030/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gas (C6-C14)	26,000	5,000	µg/L	100		1/28/05

NORTH COAST LABORATORIES
5680 West End Road • Arcata, California 95521-9202 • 707-822-4649 • FAX 707-822-6831

North Coast Laboratories, Ltd.

Date: 28-Jan-05

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0501441
Project: 001032, Former Firhaven Shell

QC SUMMARY REPORT

Method Blank

Sample ID **MB-1/27/05** Batch ID: **R33061** Test Code: **BTXEW** Units: **µg/L** Analysis Date **1/27/05 7:09:34 PM** Prep Date

Client ID: Run ID: **ORGC8_050127B** SeqNo: **479247**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	1.344	3.0									J
Benzene	ND	0.50									
Toluene	0.1510	0.50									J
Ethylbenzene	ND	0.50									
m,p-Xylene	0.2396	0.50									J
o-Xylene	ND	0.50									
Cis-1,2-Dichloroethylene	1.06	0.10	1.00	0	106%	85	115	0			

Sample ID **MB-1/27/05** Batch ID: **R33060** Test Code: **TPHCGW** Units: **µg/L** Analysis Date **1/27/05 7:09:34 PM** Prep Date

Client ID: Run ID: **ORGC8_050127A** SeqNo: **479223**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	ND	50									

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 28-Jan-05

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0501441
Project: 001032, Former Firhaven Shell

QC SUMMARY REPORT
Laboratory Control Spike

Sample ID **LCS-05063** Batch ID: **R33061** Test Code: **BTXEW** Units: **µg/L** Analysis Date **1/27/05 3:02:41 PM** Prep Date
Client ID: Run ID: **ORGC8_050127B** SeqNo: **479244**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	43.58	3.0	40.0	0	109%	85	115	0			
Benzene	5.115	0.50	5.00	0	102%	85	115	0			
Toluene	5.353	0.50	5.00	0	107%	85	115	0			
Ethylbenzene	5.320	0.50	5.00	0	106%	85	115	0			
m,p-Xylene	10.64	0.50	10.0	0	106%	85	115	0			
o-Xylene	5.416	0.50	5.00	0	108%	85	115	0			
Cis-1,2-Dichloroethylene	1.32	0.10	1.00	0	132%	85	115	0			S

Sample ID **LCSSD-05063** Batch ID: **R33061** Test Code: **BTXEW** Units: **µg/L** Analysis Date **1/27/05 3:38:47 PM** Prep Date
Client ID: Run ID: **ORGC8_050127B** SeqNo: **479245**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	44.13	3.0	40.0	0	110%	85	115	43.6	1.25%	15	
Benzene	5.139	0.50	5.00	0	103%	85	115	5.12	0.464%	15	
Toluene	5.286	0.50	5.00	0	106%	85	115	5.35	1.26%	15	
Ethylbenzene	5.302	0.50	5.00	0	106%	85	115	5.32	0.325%	15	
m,p-Xylene	10.58	0.50	10.0	0	106%	85	115	10.6	0.534%	15	
o-Xylene	5.339	0.50	5.00	0	107%	85	115	5.42	1.43%	15	
Cis-1,2-Dichloroethylene	1.25	0.10	1.00	0	126%	85	115	1.32	5.25%	15	S

Sample ID **LCS-05064** Batch ID: **R33060** Test Code: **TPHCGW** Units: **µg/L** Analysis Date **1/27/05 4:49:46 PM** Prep Date
Client ID: Run ID: **ORGC8_050127A** SeqNo: **479220**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	480.3	50	500	0	96.1%	81	126	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0501441
Project: 001032, Former Firhaven Shell

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

Sample ID **LCSD-05064** Batch ID: **R33060** Test Code: **TPHCGW** Units: **µg/L** Analysis Date **1/27/05 5:24:48 PM** Prep Date
Client ID: Run ID: **ORGC8_050127A** SeqNo: **479221**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	489.7	50	500	0	97.9%	81	126	480	1.94%	15	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

NORTH COAST LABORATORIES LTD.
5680 West End Road • Arcata • CA 95521-9202
707-822-4649 Fax 707-822-6831

Chain of Custody

LABORATORY NUMBER: 050144

Attention: Frans Lowman
Results & Invoice to: SHN
Address: 812 West Wabash Avenue
Eureka, CA 95501
Phone: 441-8855
Copies of Report to:
Sampler (Sign & Print): David R Paine David R. Paine

PROJECT INFORMATION
Project Number: 001032
Project Name: Former Fairhaven Shell
Purchase Order Number:

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5–7 Day
☒ STD (2–3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms ☐
Preliminary: FAX ☐ Verbal ☐ By: __/__/__
Final Report: FAX ☐ Verbal ☐ By: __/__/__

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*	PRESERVATIVE	CONTAINER	ANALYSIS: TPHG 3510	ANALYSIS: EPA 5035/8015M	ANALYSIS: BTEX and MTBE	ANALYSIS: EPA 5035/8021B
	MW-4	1/21/05	1225	GW	b	9	X	X	X	X
	MW-2		1320				X	X	X	X
	MW-3		1340				X	X	X	X
	MW-1	↓	1400	↓			X	X	X	X

SAMPLE CONDITION/SPECIAL INSTRUCTIONS
EDF
Global ID # T0602391110
Evidence Sealing —
Sample Temp 5.1°C

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
David R. Paine David R. Paine	1/21/05	Amanda Bartt	1/21/05 15:10

SAMPLE DISPOSAL
☒ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus (Hand)

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT